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CLAIMS

[Claim(s)]

[Claim 1] When a printing control terminal performs printing processing using the data for printing received from the request terminal When there is a re-printing demand which extracted the page information which searches a newpage position from the data for printing, and shows the printing starting position of each page, saved the aforementioned page information with the data for the aforementioned printing after the printing processing end, and specified the page, The printing control method characterized by printing the page to which the saved data correspond with reference to the aforementioned page information.

[Claim 2] The printing control system characterized by providing the following. The spool file which stores the received data for printing in the printing control terminal which receives a printing request The spooler which generates the page information which searches a newpage position from the aforementioned data for printing, and shows the printing starting position of each page The permanent file which saves the data and the page information for the aforementioned printing after a printing processing end The printing processing section which prints the page to which the saved data correspond with reference to the aforementioned page information according to the re-printing demand which specified the page after printing processing

[Claim 3] It is the printing control system which carries out [having had the printing processing section which prints the page to which the saved data correspond with reference to the aforementioned page information according to the re-printing demand which specified the page after printing processing, after the spool file held the data and the page information for printing as it was in the claim 2 when printing was completed, and the printing control section ended printing, and] as the feature.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the printing control method and printing control system which can perform a re-printing request easily about arbitrary pages, when printing is requested through communication lines, such as LAN (Local Area Network).

[0002]

[Description of the Prior Art] Between the terminal units mutually connected through a communication line like LAN, a certain terminal unit may request printing of a file etc. to other terminal units. In such a case, a request terminal transmits the data for printing to a printing control terminal. A printing control terminal stores the received data for printing in the spool file of a general-purpose operation system. Then, a printing control terminal outputs in order the data stored in the spool file to a printer, and performs printing control.

[0003]

[Problem(s) to be Solved by the Invention] By the way, there were the following technical problems which should be solved in the above printing control methods conventionally. After the printing control terminal which received the printing request sends out data required for a printer and ending printing, it eliminates the data stored in the spool file. Therefore, when a certain obstacle occurs during printing and all printings of a file are not completed, all data must be re-received anew and printing must be redone.

[0004] Moreover, when printing is completed normally, the print data in a spool file are eliminated immediately. When some output forms with which the user was printed are lost on the other hand or the part where printing concentration is inadequate is discovered in part, he may wish to print again about the portion. Also in this case, the data of the page which corresponds from a request terminal must be resent, and printing must be redone.

[0005] However, the procedure for the above re-printings is the same as the procedure which performs a printing request at the beginning, and needed various kinds of procedure which transmits the data for printing or specifies the page for printing, and the problem of it not only becoming a big burden, but having made the occupancy time of a communication line increasing in vain, and barring effective use of resources for an official in charge was.

[0006]

[Means for Solving the Problem] this invention adopts the next composition in order to solve the above point. The method of this invention extracts the page information which searches a newpage position from the data for printing, and shows the printing starting position of each page, when a printing control terminal performs printing processing using the data for printing received from the request terminal. Furthermore, it is characterized by printing the page to which the data which saved page information with the data for printing after the printing processing end, and were saved with reference to page information when there was a re-printing demand which specified the page correspond.

[0007] Moreover, the equipment of this invention searches a newpage position from the data for printing with the spool file which stores the received data for printing in the printing control terminal which receives a printing request, and is equipped with the spooler which generates the page information which shows the printing starting position of each page. Furthermore, it is characterized by having the printing processing section which prints the page to which the data saved with reference to page information according to the re-printing demand which specified the page after printing processing to be the permanent file which saves the data and the page information for printing after the printing processing end correspond.

[0008]

[Function] If the data for printing are received by the printing control terminal, reference of a newpage position will be first performed by the spooler. Printing data are stored in the data file of a spool file, and the page information which shows the printing starting position of each page is stored in a page management file. Referring to this spool file, the printing processing section controls a printer and performs printing. After a printing end is posted to a permanent file, and the content of this spool file is saved. If there is a re-printing request which specified the page, with reference to a page management file, the printing data which correspond from a data file will be read. It becomes unnecessary therefore, to send again the data for printing of the page which corresponds from a request terminal.

[0009]

[Example] Hereafter, this invention is explained in detail using the example of drawing. Drawing 1 is the block diagram showing the printing control-system example of this invention. In this system, the request terminal 10 is

connected with the printing control terminal 20 through the communication lines 1, such as LAN. In addition, in addition to this, many terminal units shall be connected to this communication line 1. Moreover, what has a printer among these terminal units functions as a printing control terminal as shown in this drawing. Therefore, the printing control terminal 20 may be a terminal only for printings, or may be a terminal which operates like the usual terminal and has a printing function further.

[0010] The re-printing utility 11, the request application 12, the page boundary reference processing section 13, and the general-purpose operation system 14 are formed in the request terminal 10. Moreover, a utility 21, the printing processing section 22, a spooler 23, the storage section 24, and the general-purpose operation system 29 are formed in the printing control terminal 20. The printing processing section 22 is a portion which controls the printer 3 connected to the printing control terminal 20. The spool file 25 and the permanent file 30 are stored in the storage section 24. The spool file 25 has the whole management file 26, the page management file 27, and the data file 28. The permanent file 30 has the whole management file 31, the page management file 32, and the data file 33.

[0011] Each block formed in the above-mentioned request terminal 10 and the printing control terminal 20 consists of a control program which has the fixed function explained later, respectively, and a circuit. The request application 12 of the request terminal 10 consists of application programs which draw up a document etc., generate the data for printing and perform a printing request to the printing control terminal 20. The general-purpose operation system 14 consists of operation systems (OS) of the various kinds known well which control operation of the request terminal 10. The page boundary reference processing section 13 is a portion which performs processing which searches the boundary which serves as a newpage from the data for printing, and inserts a page boundary identifier, as explained later using drawing 5. The re-printing utility 11 is a portion which performs processing which turns and outputs the re-printing request which specified the page about arbitrary pages based on the printing result to the printing control terminal 20 after a printing end.

[0012] The utility 21 of the printing control terminal 20 is the portion which manages the fixed function prepared in the printing control terminal 20, and has the function to transmit the re-printing demand by the re-printing utility 11 of the request terminal 10 to the printing processing section 22, in the equipment of this invention. The printing processing section 22 controls a printer 3, and performs printing control. A spooler 23 is a portion which performs processing which receives the data for printing from the page boundary reference processing section 13 of the request terminal 10, searches a page boundary identifier as explains later using drawing 6, and generates a spool file 25. A spool file 25 is a data file used when the printing processing section 22 performs the first printing. The whole management file 26 is a portion which stores the attribute information on the data for printing. The page management file 27 is a portion which stores the page information explained after the data for printing using drawing 3. A data file 33 is a portion which stores the printing data actually sent out towards a printer 3. A permanent file 30 consists of storage regions for copying a spool file 25 as it is just as it is, for example, and saving it during a fixed period. The general-purpose operation system 29 consists of operation systems which control operation of this printing control terminal 20 and which were known well conventionally.

[0013] Composition explanatory drawing of the received data which the printing control terminal 20 receives to drawing 2 is shown. The request application 12 of the request terminal 10 shown in drawing 1 generates the document file which, in addition to this, contains a character code and various kinds of control codes as data for printing. In this case, the page boundary reference processing section 13 detects the boundary used as the newpage contained in this, and inserts a page boundary identifier there. The received data 40 of the printing control terminal 20 shown in this drawing 2 are data generated as a result of such processing. That is, a header 41 is formed in the head portion of data, and the page boundary identifier 43 which shows the printing data 42 and a page boundary after that serves as a content arranged by turns. In the printing control system of the general former, it is collectively stored in a spool file 25 by these received data 40, and in the case of printing, it is outputted as it is and transmitted to a printer.

[0014] Example explanatory drawing of page information is shown in drawing 3. The spooler 23 shown in drawing 1 analyzes the received data 40 as shown in drawing 2, and extracts page information. The content turns into a content which shows from which position of the data for printing each page is started, as shown, for example in this drawing. For example, xx byte eye to the 2nd page [1st] page becomes the information on the content that the 3rd page is from OO byte eye from **** byte eye.

[0015] If a spooler 23 accepts the received data 40 shown in drawing 2 and such information searches and discovers the page boundary identifier 43, the following printing data will memorize from what byte it is started. This serves as page information and is stored in the page management file 27 shown in drawing 1. The above page information is unnecessary, when a printing request is received first, and printing is performed as it is, then printing is completed. Moreover, after ending printing, by the conventional printing control method of deleting the content of a spool file and extinguishing the received data, it is unnecessary information.

[0016] On the other hand, in the method of this invention, the content of a spool file 25 is stored in the permanent file 30 after the printing end. And when there is a re-printing request which specified the page from the exterior, the data which correspond immediately are read from a permanent file 30, and it sends to a printer 3, and enables it to perform printing processing. For this purpose, page information is beforehand generated so that the data of the corresponding page can be extracted easily, and it stores in the permanent file 30.

[0017] Processing explanatory drawing to a re-printing demand is shown in drawing 4. By the method of this invention, a re-printing processing demand is received in a mode as shown in this drawing. First, the example which carried out the similar copy of the data for printing, and saved them from the spool file 25 to the permanent file 30

at (a) is shown. When printing terminates normally, such preservation is performed, when there is re-printing demand 45, the data of the page which corresponds from a permanent file 30 are read, and printing processing is performed. [0018] Handling when printing is not completed normally is shown in (b). When printing is not completed normally, there are two kinds of methods of dealing with it. First, if printing is not completed normally, the content of a spool file 25 is left as it is, and the purport which printing terminated abnormally is notified to the request terminal 10. In this case, the printing control terminal 20 interrupts a receptionist and printing control of others of a printing request, and waits for directions of the request terminal 10. And if there is a re-printing request of page specification from the request terminal 10, with reference to the page management file 27 of the spool file 25 shown in drawing 1, the data which correspond from a data file 28 will be read, and re-printing processing will be performed.

[0019] It is also possible to store the content of a spool file 25 in the similar permanent file 30 completely like the case where it terminates normally on the other hand when printing terminates abnormally. In this case, the content of a spool file 25 is cleared and it becomes possible to receive and perform other printing processings etc. On the other hand, after abnormal termination, if there is re-printing demand 46, with reference to the page management file 32 stored in the permanent file 30, the data of the page which corresponds from a data file 33 will be taken out, and printing processing will be performed. This serves as the completely same procedure as the re-printing demand after normal termination.

[0020] The data for printing are stored and held at the storage section 24 of the printing control terminal 20, and the corresponding data can be taken out and printed about arbitrary pages according to page information until there is a re-printing request above in any case, after receiving a printing request. Therefore, it is not necessary to a re-printing demand to resend the data for printing from the request terminal 10.

[0021] The above-mentioned operation is concretely explained in order using a flow chart below. Drawing 5 shows the operation flow chart of the page boundary reference processing section 13 shown in drawing 1. First, in Step S1, the data for printing are received from the request application 12. Next, in Step S2, every one line of the data is searched and the boundary used as a newpage is searched. And in Step S3, if it is recognized as it being a newpage, it moves to Step S5 and a page boundary identifier is stored in a newpage position. After that, the candidate for a search is advanced to the following line (Step S6). When there is no boundary used as a newpage, as shown in step S4, it moves to the following line as it is. And in Step S7, processing of Step S2 - Step S6 is repeated until it is judged that it is the last line. After a search is completed to the last line, it moves to Step S8 and the data for printing are transmitted to the spooler 23 of the printing control terminal 20 through the communication lines 1, such as LAN.

[0022] Explanatory drawing of a spooler of operation is shown in drawing 6. First, in Step S1, a spooler 23 receives transfer data from the page boundary reference processing section 13. Next, in Step S2, the attribute of the printing data contained in the data for printing is written in the whole spool file 25 management file 26. And in Step S3, it analyzes printing data of one line at a time. Consequently, in step S4, when a page boundary identifier is detected, in Step S5, page information is written in the page management file 27. The content is as having been shown in drawing 3. Then, it progresses to the following line in Step S6, and processing of Step S3 - Step S6 is repeated until it is judged that it is the last line in Step S7. In this way, if all the page boundary identifiers contained in the data for printing are detected and required page information is stored in the page management file 27, it moves to Step S8 and the whole printing data is stored in a data file 28.

[0023] The printing processing flow chart in usual is shown in drawing 7. The printing control section 22 of the printing control terminal 20 performs printing processing according to a procedure as shown in this drawing. First, in Step S1, the attribute of printing data is read from a whole management file. And according to the content, data are read from the data file 28 of a spool file 25, and it outputs towards a printer 3. Then, in Step S3, it judges whether it is unusual whether a printing result is normal. Here, when a printing result is judged to be normal, it moves to step S4, and a spool file is saved at a permanent file 30. And in Step S6, the purport which printing terminated normally to the request terminal 10 is notified via a communication line 1. The request application 12 recognizes a printing end in response to this notice.

[0024] The purport which moved to Step S5 when a printing result was judged to be unusual, and was terminated abnormally in Step S3 on the other hand is notified to the request application 12. In addition, only when it terminates normally, it is made to save the content of a spool file 25 shown in drawing 1 like this flow chart in this example at a permanent file 30. This is for waiting for the re-printing request of the request application 12 etc., where the data for printing are held to a spool file 25, when it terminates abnormally.

[0025] The printing processing operation flow chart at the time of obstacle generating is shown in drawing 8. When an obstacle occurs, the printing processing section 22 performs printing processing in a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 operates, and printing directions are sent in to the printing processing section 22 via a utility 21. Here, the content of the printing directions is judged in Step S2. When there are directions of the purport which stops printing, it moves to Step S3, and the content of a spool file 25 is deleted as it is, it moves to Step S10, and control is returned to a utility. And in Step S2, if the content of printing directions shows re-printing from a specification page, it will move to Step S5 and the page information on the resumption specification page of re-printing will be taken out from the page management file 27 of a spool file 25. And the printing data of the page which corresponds according to the page information are read from a data file 28. Then, the data is outputted to a printer (Step S7), and printing is performed.

[0026] Moreover, in Step S2, when directions of the purport re-printed from a head are received, all printing data

are unconditionally read from a data file 28 (Step S4). This printing data also progresses to Step S7, and is outputted to a printer. Then, in Step S8, when it is judged whether printing was completed normally and it ends normally, the contents of a spool file 25 are stored in a permanent file 30 like Step S4 of drawing 7 (Step S9). And it moves to Step S10 and control is returned to a utility.

[0027] Drawing 9 shows the permanent-file re-printing processing operation flow chart after normal termination. When received printing is completed normally seemingly, re-printing control is performed according to a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 performs printing request directions through the utility 21 of the printing control terminal 20. In this case, it moves from Step S1 to Step S2, and the contents of request directions are judged. If the contents of request directions are re-printing from a specification page, it will move to Step S3 and the page information on the resumption specification page of re-printing will be read from the page management file 32 of a permanent file 30. And it moves to Step S4, the printing data which correspond from the data file 33 of a permanent file 30 are read, and it outputs to a printer 3 in Step S6. After that, in Step S7, control is returned to a utility.

[0028] The re-printing request operation flow chart by the utility at the time of obstacle generating is shown in drawing 10. In the re-printing utility 11 side, request operation as shown in this drawing is performed. That is, in Step S1, directions of whether after obstacle generating stops the printing processing, or specifies a page, and requests re-printing or to perform re-printing anew from a head are chosen, and a request is outputted. The request is sent to the printing control terminal 20, and processing returns from the printing control terminal 20 according to the procedure already explained that printing processing is completed (Step S2). Here, in Step S3, it is judged whether it is normal, if not normal, it will be judged in Step S4 whether a re-printing request is performed again, and in carrying out a re-printing request, it returns to Step S1. Moreover, in stopping printing, it moves to Step S5, and a printing processing stop is requested from the printing control terminal 20.

[0029] The operation flow chart of the utility in the case of the permanent-file re-printing request after normal termination is shown in drawing 11. If there is a printing poor portion after normal termination, directions of whether the re-printing utility 11 performs re-printing of page specification to the printing control terminal 20 or to perform re-printing from a head will be chosen, and a directions request will be issued. And in Step S2, if printing control of the printing control terminal 20 is completed and control returns, in Step S3, it will judge whether processing was completed normally. In performing a retry, it returns from Step S4 to Step S1 completely like what was shown in drawing 10. Moreover, when a retry is unnecessary, it progresses to Step S5, and the stop of printing is requested. If it has ended normally, operation of a utility will be ended as it is.

[0030] The printing control method of this invention is not limited to the above example. As long as it seems that the contents of printed information can extract the data of the corresponding page when there is a re-printing request from the data for printing substantially, they may be the things of what form and the contents. Moreover, as explained previously, even if the re-printing demand after abnormal termination refers to a spool file, once it does not interfere even if it enables it to refer to a permanent file and it stores it in a permanent file altogether, a spool file has the advantage that it can be freely used for a new printing demand etc.

[0031] Moreover, it is necessary to save no data for printing as they are at a permanent file. That is, it is desirable to prepare a utility which eliminates in order data without a possibility that a re-printing request may already occur to suitable timing.

[0032]

[Effect of the Invention] According to the printing control method and printing control system of this invention which were explained above When a printing control terminal performs printing processing using the data for printing received at the request terminal, a newpage position is searched from the data for printing. When there is a re-printing demand which extracted the page information which shows the printing starting position of each page, saved with the data for printing after the printing processing end, and specified the page, Since the page to which the saved data correspond was printed with reference to page information, it becomes unnecessary to send the data for printing again to a printing control terminal. Therefore, request application is again started for re-printing, the procedure of performing a printing request is skipped, and re-printing is attained only by taking out the printing request which specified the page from a utility. For this reason, time to transmit the warm-up time of request application and the data for printing etc. can be saved, and the processing time for re-printing is shortened. Moreover, there is an effect which mitigates the traffic of the communication line which connects a request terminal and a printing control terminal.

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TECHNICAL FIELD

[Industrial Application] this invention relates to the printing control method and printing control system which can perform a re-printing request easily about arbitrary pages, when printing is requested through communication lines, such as LAN (Local Area Network).

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PRIOR ART

[Description of the Prior Art] Between the terminal units mutually connected through a communication line like LAN, a certain terminal unit may request printing of a file etc. to other terminal units. In such a case, a request terminal transmits the data for printing to a printing control terminal. A printing control terminal stores the received data for printing in the spool file of a general-purpose operation system. Then, a printing control terminal outputs in order the data stored in the spool file to a printer, and performs printing control.

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EFFECT OF THE INVENTION

[Effect of the Invention] When a printing control terminal performs printing processing using the data for printing received at the request terminal according to the printing control method and printing control system of this invention which were explained above, a newpage position is searched from the data for printing. Since the page to which the data which extracted the page information which shows the printing starting position of each page, saved with the data for printing after the printing processing end, and were saved with reference to page information when there was a re-printing demand which specified the page correspond was printed, it becomes unnecessary to send the data for printing again to a printing control terminal. Therefore, request application is again started for re-printing, the procedure of performing a printing request is skipped, and re-printing is attained only by taking out the printing request which specified the page from a utility. For this reason, time to transmit the warm-up time of request application and the data for printing etc. can be saved, and the processing time for re-printing is shortened. Moreover, there is an effect which mitigates the traffic of the communication line which connects a request terminal and a printing control terminal.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, there were the following technical problems which should be solved in the above printing control methods conventionally. After the printing control terminal which received the printing request sends out data required for a printer and ending printing, it eliminates the data stored in the spool file. Therefore, when a certain obstacle occurs during printing and all printings of a file are not completed, all data must be re-received anew and printing must be redone.

[0004] Moreover, when printing is completed normally, the print data in a spool file are eliminated immediately. When some output forms with which the user was printed are lost on the other hand or the part where printing concentration is inadequate is discovered in part, he may wish to print again about the portion. Also in this case, the data of the page which corresponds from a request terminal must be resent, and printing must be redone.

[0005] However, the procedure for the above re-printings is the same as the procedure which performs a printing request at the beginning, and needed various kinds of procedure which transmits the data for printing or specifies the page for printing, and the problem of it not only becoming a big burden, but having made the occupancy time of a communication line increasing in vain, and barring effective use of resources for an official in charge was.

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MEANS

[Means for Solving the Problem] this invention adopts the next composition in order to solve the above point. The method of this invention extracts the page information which searches a newpage position from the data for printing, and shows the printing starting position of each page, when a printing control terminal performs printing processing using the data for printing received from the request terminal. Furthermore, it is characterized by printing the page to which the data which saved page information with the data for printing after the printing processing end, and were saved with reference to page information when there was a re-printing demand which specified the page correspond.

[0007] Moreover, the equipment of this invention searches a newpage position from the data for printing with the spool file which stores the received data for printing in the printing control terminal which receives a printing request, and is equipped with the spooler which generates the page information which shows the printing starting position of each page. Furthermore, it is characterized by having the printing processing section which prints the page to which the data saved with reference to page information according to the re-printing demand which specified the page after printing processing to be the permanent file which saves the data and the page information for printing after the printing processing end correspond.

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OPERATION

[Function] If the data for printing are received by the printing control terminal, reference of a newpage position will be first performed by the spooler. Printing data are stored in the data file of a spool file, and the page information which shows the printing starting position of each page is stored in a page management file. Referring to this spool file, the printing processing section controls a printer and performs printing. After a printing end is posted to a permanent file, and the content of this spool file is saved. If there is a re-printing request which specified the page, with reference to a page management file, the printing data which correspond from a data file will be read. It becomes unnecessary therefore, to send again the data for printing of the page which corresponds from a request terminal.

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EXAMPLE

[Example] Hereafter, this invention is explained in detail using the example of drawing. Drawing 1 is the block diagram showing the printing control-system example of this invention. In this system, the request terminal 10 is connected with the printing control terminal 20 through the communication lines 1, such as LAN. In addition, in addition to this, many terminal units shall be connected to this communication line 1. Moreover, what has a printer among these terminal units functions as a printing control terminal as shown in this drawing. Therefore, the printing control terminal 20 may be a terminal only for printings, or may be a terminal which operates like the usual terminal and has a printing function further.

[0010] The re-printing utility 11, the request application 12, the page boundary reference processing section 13, and the general-purpose operation system 14 are formed in the request terminal 10. Moreover, a utility 21, the printing processing section 22, a spooler 23, the storage section 24, and the general-purpose operation system 29 are formed in the printing control terminal 20. The printing processing section 22 is a portion which controls the printer 3 connected to the printing control terminal 20. The spool file 25 and the permanent file 30 are stored in the storage section 24. The spool file 25 has the whole management file 26, the page management file 27, and the data file 28. The permanent file 30 has the whole management file 31, the page management file 32, and the data file 33.

[0011] Each block formed in the above-mentioned request terminal 10 and the printing control terminal 20 consists of a control program which has the fixed function explained later, respectively, and a circuit. The request application 12 of the request terminal 10 consists of application programs which draw up a document etc., generate the data for printing and perform a printing request to the printing control terminal 20. The general-purpose operation system 14 consists of operation systems (OS) of the various kinds known well which control operation of the request terminal 10. The page boundary reference processing section 13 is a portion which performs processing which searches the boundary which serves as a newpage from the data for printing, and inserts a page boundary identifier, as explained later using drawing 5. The re-printing utility 11 is a portion which performs processing which turns and outputs the re-printing request which specified the page about arbitrary pages based on the printing result to the printing control terminal 20 after a printing end.

[0012] The utility 21 of the printing control terminal 20 is the portion which manages the fixed function prepared in the printing control terminal 20, and has the function to transmit the re-printing demand by the re-printing utility 11 of the request terminal 10 to the printing processing section 22, in the equipment of this invention. The printing processing section 22 controls a printer 3, and performs printing control. A spooler 23 is a portion which performs processing which receives the data for printing from the page boundary reference processing section 13 of the request terminal 10, searches a page boundary identifier as explains later using drawing 6, and generates a spool file 25. A spool file 25 is a data file used when the printing processing section 22 performs the first printing. The whole management file 26 is a portion which stores the attribute information on the data for printing. The page management file 27 is a portion which stores the page information explained after the data for printing using drawing 3. A data file 33 is a portion which stores the printing data actually sent out towards a printer 3. A permanent file 30 consists of storage regions for copying a spool file 25 as it is just as it is, for example, and saving it during a fixed period. The general-purpose operation system 29 consists of operation systems which control operation of this printing control terminal 20 and which were known well conventionally.

[0013] Composition explanatory drawing of the received data which the printing control terminal 20 receives to drawing 2 is shown. The request application 12 of the request terminal 10 shown in drawing 1 generates the document file which, in addition to this, contains a character code and various kinds of control codes as data for printing. In this case, the page boundary reference processing section 13 detects the boundary used as the newpage contained in this, and inserts a page boundary identifier there. The received data 40 of the printing control terminal 20 shown in this drawing 2 are data generated as a result of such processing. That is, a header 41 is formed in the head portion of data, and the page boundary identifier 43 which shows the printing data 42 and a page boundary after that serves as a content arranged by turns. In the printing control system of the general former, it is collectively stored in a spool file 25 by these received data 40, and in the case of printing, it is outputted as it is and transmitted to a printer.

[0014] Example explanatory drawing of page information is shown in drawing 3. The spooler 23 shown in drawing 1 analyzes the received data 40 as shown in drawing 2, and extracts page information. The content turns into a content which shows from which position of the data for printing each page is started, as shown, for example in this drawing. For example, xx byte eye to the 2nd page [1st] page becomes the information on the content that the 3rd page is from OO byte eye from **** byte eye.

[0015] If a spooler 23 accepts the received data 40 shown in drawing 2 and such information searches and discovers the page boundary identifier 43, the following printing data will memorize from what byte it is started. This serves as page information and is stored in the page management file 27 shown in drawing 1. The above page information is unnecessary, when a printing request is received first, and printing is performed as it is, then printing is completed. Moreover, after ending printing, by the conventional printing control method of deleting the content of a spool file and extinguishing the received data, it is unnecessary information.

[0016] On the other hand, in the method of this invention, the contents of a spool file 25 are stored in the permanent file 30 after the printing end. And when there is a re-printing request which specified the page from the exterior, the data which correspond immediately are read from a permanent file 30, and it sends to a printer 3, and enables it to perform printing processing. For this purpose, page information is beforehand generated so that the data of the corresponding page can be extracted easily, and it stores in the permanent file 30.

[0017] Processing explanatory drawing to a re-printing demand is shown in drawing 4. By the method of this invention, a re-printing processing demand is received in a mode as shown in this drawing. First, the example which carried out the similar copy of the data for printing, and saved them from the spool file 25 to the permanent file 30 at (a) is shown. When printing terminates normally, such preservation is performed, when there is re-printing demand 45, the data of the page which corresponds from a permanent file 30 are read, and printing processing is performed.

[0018] Handling when printing is not completed normally is shown in (b). When printing is not completed normally, there are two kinds of methods of dealing with it. First, if printing is not completed normally, the content of a spool file 25 is left as it is, and the purport which printing terminated abnormally is notified to the request terminal 10. In this case, the printing control terminal 20 interrupts a receptionist and printing control of others of a printing request, and waits for directions of the request terminal 10. And if there is a re-printing request of page specification from the request terminal 10, with reference to the page management file 27 of the spool file 25 shown in drawing 1, the data which correspond from a data file 28 will be read, and re-printing processing will be performed.

[0019] It is also possible to store the content of a spool file 25 in the similar permanent file 30 completely like the case where it terminates normally on the other hand when printing terminates abnormally. In this case, the content of a spool file 25 is cleared and it becomes possible to receive and perform other printing processings etc. On the other hand, after abnormal termination, if there is re-printing demand 46, with reference to the page management file 32 stored in the permanent file 30, the data of the page which corresponds from a data file 33 will be taken out, and printing processing will be performed. This serves as the completely same procedure as the re-printing demand after normal termination.

[0020] The data for printing are stored and held at the storage section 24 of the printing control terminal 20, and the corresponding data can be taken out and printed about arbitrary pages according to page information until there is a re-printing request above in any case, after receiving a printing request. Therefore, it is not necessary to a re-printing demand to resend the data for printing from the request terminal 10.

[0021] The above-mentioned operation is concretely explained in order using a flow chart below. Drawing 5 shows the operation flow chart of the page boundary reference processing section 13 shown in drawing 1. First, in Step S1, the data for printing are received from the request application 12. Next, in Step S2, every one line of the data is searched and the boundary used as a newpage is searched. And in Step S3, if it is recognized as it being a newpage, it moves to Step S5 and a page boundary identifier is stored in a newpage position. After that, the candidate for a search is advanced to the following line (Step S6). When there is no boundary used as a newpage, as shown in step S4, it moves to the following line as it is. And in Step S7, processing of Step S2 – Step S6 is repeated until it is judged that it is the last line. After a search is completed to the last line, it moves to Step S8 and the data for printing are transmitted to the spooler 23 of the printing control terminal 20 through the communication lines 1, such as LAN.

[0022] Explanatory drawing of a spooler of operation is shown in drawing 6. First, in Step S1, a spooler 23 receives transfer data from the page boundary reference processing section 13. Next, in Step S2, the attribute of the printing data contained in the data for printing is written in the whole spool file 25 management file 26. And in Step S3, it analyzes printing data of one line at a time. Consequently, in step S4, when a page boundary identifier is detected, in Step S5, page information is written in the page management file 27. The content is as having been shown in drawing 3. Then, it progresses to the following line in Step S6, and processing of Step S3 – Step S6 is repeated until it is judged that it is the last line in Step S7. In this way, if all the page boundary identifiers contained in the data for printing are detected and required page information is stored in the page management file 27, it moves to Step S8 and the whole printing data is stored in a data file 28.

[0023] The printing processing flow chart in usual is shown in drawing 7. The printing control section 22 of the printing control terminal 20 performs printing processing according to a procedure as shown in this drawing. First, in Step S1, the attribute of printing data is read from a whole management file. And according to the content, data are read from the data file 28 of a spool file 25, and it outputs towards a printer 3. Then, in Step S3, it judges whether it is unusual whether a printing result is normal. Here, when a printing result is judged to be normal, it moves to step S4, and a spool file is saved at a permanent file 30. And in Step S6, the purport which printing terminated normally to the request terminal 10 is notified via a communication line 1. The request application 12 recognizes a printing end in response to this notice.

[0024] The purport which moved to Step S5 when a printing result was judged to be unusual, and was terminated abnormally in Step S3 on the other hand is notified to the request application 12. In addition, only when it terminates

normally, it is made to save the content of a spool file 25 shown in drawing 1 like this flow chart in this example at a permanent file 30. This is for waiting for the re-printing request of the request application 12 etc., where the data for printing are held to a spool file 25, when it terminates abnormally.

[0025] The printing processing operation flow chart at the time of obstacle generating is shown in drawing 8. When an obstacle occurs, the printing processing section 22 performs printing processing in a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 operates, and printing directions are sent in to the printing processing section 22 via a utility 21. Here, the content of the printing directions is judged in Step S2. When there are directions of the purport which stops printing, it moves to Step S3, and the content of a spool file 25 is deleted as it is, it moves to Step S10, and control is returned to a utility. And in Step S2, if the content of printing directions shows re-printing from a specification page, it will move to Step S5 and the page information on the resumption specification page of re-printing will be taken out from the page management file 27 of a spool file 25. And the printing data of the page which corresponds according to the page information are read from a data file 28. Then, the data is outputted to a printer (Step S7), and printing is performed.

[0026] Moreover, in Step S2, when directions of the purport re-printed from a head are received, all printing data are unconditionally read from a data file 28 (step S4). This printing data also progresses to Step S7, and is outputted to a printer. Then, in Step S8, when it is judged whether printing was completed normally and it ends normally, the content of a spool file 25 is stored in a permanent file 30 like step S4 of drawing 7 (step S9). And it moves to Step S10 and control is returned to a utility.

[0027] Drawing 9 shows the permanent-file re-printing processing operation flow chart after normal termination. When received printing is completed normally seemingly, re-printing control is performed according to a procedure as shown in this drawing. First, in Step S1, the re-printing utility 11 of the request terminal 10 performs printing request directions through the utility 21 of the printing control terminal 20. In this case, it moves from Step S1 to Step S2, and the content of request directions is judged. If the content of request directions is re-printing from a specification page, it will move to Step S3 and the page information on the resumption specification page of re-printing will be read from the page management file 32 of a permanent file 30. And it moves to step S4, the printing data which correspond from the data file 33 of a permanent file 30 are read, and it outputs to a printer 3 in Step S6. After that, in Step S7, control is returned to a utility.

[0028] The re-printing request operation flow chart by the utility at the time of obstacle generating is shown in drawing 10. In the re-printing utility 11 side, request operation as shown in this drawing is performed. That is, in Step S1, directions of whether after obstacle generating stops the printing processing, or specifies a page, and requests re-printing or to perform re-printing anew from a head are chosen, and a request is outputted. The request is sent to the printing control terminal 20, and processing returns from the printing control terminal 20 according to the procedure already explained that printing processing is completed (Step S2). Here, in Step S3, it is judged whether it is normal, if not normal, it will be judged in step S4 whether a re-printing request is performed again, and in carrying out a re-printing request, it returns to Step S1. Moreover, in stopping printing, it moves to Step S5, and a printing processing stop is requested from the printing control terminal 20.

[0029] The operation flow chart of the utility in the case of the permanent-file re-printing request after normal termination is shown in drawing 11. If there is a printing poor portion after normal termination, directions of whether the re-printing utility 11 performs re-printing of page specification to the printing control terminal 20 or to perform re-printing from a head will be chosen, and a directions request will be issued. And in Step S2, if printing control of the printing control terminal 20 is completed and control returns, in Step S3, it will judge whether processing was completed normally. In performing a retry, it returns from step S4 to Step S1 completely like what was shown in drawing 10. Moreover, when a retry is unnecessary, it progresses to Step S5, and the stop of printing is requested. If it has ended normally, operation of a utility will be ended as it is.

[0030] The printing control method of this invention is not limited to the above example. As long as it seems that the content of printed information can extract the data of the corresponding page when there is a re-printing request from the data for printing substantially, it may be the thing of what form and the content. Moreover, as explained previously, even if the re-printing demand after abnormal termination refers to a spool file, once it does not interfere even if it enables it to refer to a permanent file and it stores it in a permanent file altogether, a spool file has the advantage that it can be freely used for a new printing demand etc.

[0031] Moreover, it is necessary to save no data for printing as they are at a permanent file. That is, it is desirable to prepare a utility which eliminates in order data without a possibility that a re-printing request may already occur to suitable timing.

[Translation done.]

* NOTICES *

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.*** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the printing control-system example of this invention.

[Drawing 2] It is received-data composition explanatory drawing.

[Drawing 3] It is example explanatory drawing of page information.

[Drawing 4] It is processing explanatory drawing to a re-printing demand.

[Drawing 5] It is a page boundary reference processing operation flow chart.

[Drawing 6] It is the operation flow chart of a spooler.

[Drawing 7] Usually, it is a printing processing operation flow chart.

[Drawing 8] It is a printing processing operation flow chart at the time of obstacle generating.

[Drawing 9] It is a permanent-file re-printing processing operation flow chart after normal termination.

[Drawing 10] It is a re-printing request flow chart at the time of obstacle generating.

[Drawing 11] It is a permanent-file re-printing request flow chart after normal termination.

[Description of Notations]

3 Printer

10 Request Terminal

11 Re-Printing Utility

12 Request Application

13 Page Boundary Reference Processing Section

20 Printing Control Terminal

22 Printing Processing Section

23 Spooler

24 Storage Section

25 Spool File

30 Permanent File

[Translation done.]

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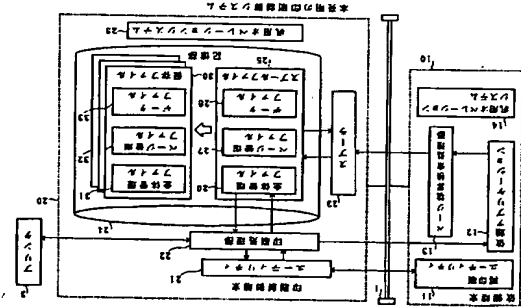
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(54) 【発明の名称】 印刷制御方法及び印刷制御システム

【目的】印刷制備處末が依頼を受けた印刷の終了後、再印刷依頼があったときの処理を容易にする。

【解説】 印刷用のデータが印刷開始時刻まで2に受信せずに、まずスプール2.3により改ページ位置の検察が実行される。スプール2.3は、スプール2.5のデータ718に格納され、ページ管理ファイル2.7にページ情報格納され、ページ2.7には改ページ位置の印刷開始位置を示すページ情報格納され、印刷処理部2.2はこのスプールファイル2.5を参照し、印刷を実行する。このスプールファイル2.5の内容は印刷終了後も保存ファイル3.2に格納され、ページ管理ファイル3.2を参照し、データページ3.3から該当する改ページデータを讀み出す。従って、依頼部1.0から該当するページ印刷用データを逐次送る必要はなくなる。



(2)

【特許請求の範囲】

【解説第1】 依頼者により受信した印刷用のデータを、印刷用のデータから改ページ位置を検出して各ページの印刷開始位置を示すページ情報を抽出し、印刷処理を終了後に前記ページ情報を前記印刷用のデータと一并で保存して、ページ番号を指定した再印刷形式があったとき、前記ページ情報を参照して、保存したデータの該当ページを印刷することを特徴とする印刷制御方法。

【請求項2】 印刷依頼を受ける印刷制御端末に、受信した印刷用のデータを格納するスプールファイルと、前記印刷用データから改ページ位置を検索して、各ページの印刷開始位置を示すページ情報を生成するスプーラと、

印刷処理終了後に前記印刷用のデータと、前記保存する保存ファイルと、印刷処理後のページを指定した再印刷要求に基づいて、前記印刷処理後のページを参照して、保存したデータの該当するページ情報とを参照して、保存したデータの該当するページ情報を印刷する印刷処理部とを備えたことを特徴とする印刷制御システム。

【請求項3】 請求項2において、
サブシステムは、印刷が終了した場合に印刷用のデータとページ情報とをそのまま保持し、
印刷処理後は、
印刷が終了した後、印刷処理後のページを指定した再印刷の印刷要求に基づいて、前記ページ情報を参照して、保存したページ情報の該当するページを印刷する印刷処理部とを備えたことを特徴とする印刷制御システム。

【発明の詳細な説明】
 【0001】
 【産業上の利用分野】 本発明は、LAN（ローカルエリアネットワーク）等の通信回線を通じて印刷を依頼しに行方できる印刷制御方法及び印刷制御システムに関する。

【0002】
 【従来の技術】 LANのような通信回線を通じて相互に接続された端末装置の間で、ある端末装置と他の端末装置との間で、印刷機を依頼することがある。この場合、依頼された端末装置は印刷機を1台と印刷用のデータを送信する。印刷機はデータを受信し、印刷用のデータを用いてジョブ・システムのスプーアル・ファイルに格納する。その後、印刷機はスプーアル・ファイルに格納されたデータをプリンタへ順に出力し印刷機を行

【0003】
【發明が解決しようとする課題】ところで、上記のように、従来の印刷制御方法には、従来のような解決すべき課題に必要データを送り出し、印刷を終了するとスプールファイルに印刷制御データを受けた印刷制御データはプリンタに

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ファイルに格納されたデータを消去する。従って、印刷中に何らかの障害が発生し、ファイルの全ての印刷が終了しなかった場合には、改めて全てのデータを再受信し、印刷をやり直さなければならない。

【0004】また、印刷が正常に終了した場合には、スプールファイルの中の出力データは直ちに消去される。一方、利用者が印刷された出力用紙の一部を紛失した1方、あるいは一部に印刷ミスが十分な箇所を発見したような場合、その部分について再度印刷を希望することがある。このような場合に、改刷済みから該当するページのデータを再送し、印刷をやり直さなければならない。

【0005】しかしながら、上記のような再印刷のため
の手書きは当初印刷依頼を行う手続きと同様であり、印
刷用のデータを送信したり、印刷用のページを指定した
りする各種の手書きを必要とし、係員にとって大きな負
担となるばかりでなく、通信回線の占有時間をいらずらに
増加させ資源の有効活用を妨げるという問題があった。

【0006】
 【課題を解決するための手段】本発明は以上の点を解決
 するため次の構成を採用する。本発明の方法は、依頼端
 来より受信した印刷用のデータを用いて印刷制御要求
 印刷処理を実行する場合に、印刷用のデータから改ページ
 位置を検索して各ページの印刷開始位置を示すページ
 情報を抽出する。更に、印刷処理終了後にページ情報を
 データと共に保存して、ページを指定した再印
 刷要求があったとき、ページ情報を参照して、保存した
 データの該当するページに印刷することを特徴とする。

【0007】また、本発明の装置は、印刷依頼を受ける印刷制御端末に、受信した印刷用のデータを格納するスプールファイルと、印刷用データからページ位置を決定し、各ページの印刷開始位置を示すページ情報を作成して、各ページの印刷開始位置を保持するスプーラを備える。更に、印刷処理終了後に印刷用のデータとページ情報を保持する保存ファイルと、印刷処理後のページ指定した再印刷要求に於て、ページ情報を参照して、保持したデータと対応するページを印刷する印刷処理部とを備えたことを特徴とする。

[0008]

【作用】印刷用のデータが印刷制御端末に受信されると、まずスプーラにより改ページ位置の検索が行われ、スプーラファイルのデータファイルには印字データが格納され、ページ管理ファイルには各ページの印刷開始位置を示すページ情報格納される。印刷処理印刷のスタートアップファイル参照しながらプリンタを制御し印刷を実行する。このスプーラファイルの内容は印刷終了後も保存ファイルに転記され保存される。ページを指定した再印刷があるため、ページ管理ファイル参照し、データファイルから該当する印字データを読み出し、從つて、印刷端末から該当するページの印刷用データを再び送る必要はなくなる。

50 タを再び送る必要はなくなる。

【0009】以下、本発明を図の実施例を用いて詳細に説明する。図1は、本発明の印刷制御システム全体の構成を示すブロック図である。このシステムでは、依頼端末10がLAN等の通信回線1を介して印刷制御端末2と接続されている。なお、この通信回線1には多数の端末装置が接続されているものとす。また、この回線の端末装置のうちプリンタに有するものは、この図に示すような印刷制御端末として機能する。従って、印刷制御端末20は印刷専用端末であってよいし、あるいは通常の端末と同様に動作し、更に印刷機能を持つような端末であってよい。

【0010】依頼端末10には、再印刷ユーティリティ11、依頼アプリケーション12、ページ境界検出処理部13及び汎用オペレーションシステム14が設けられている。また、印刷制御端末20には、ユーティリティ21、印刷処理部22、スプーラ23、記憶部24及び汎用オペレーションシステム29が設けられている。印刷処理部22は印刷制御端末20に接続されたプリンタ3を制御する部分である。記憶部24には、スプーラファイル25と依頼ファイル30が格納されている。スプーラファイル27と、データファイル28を有している。保存ファイル30は全体管理ファイル31と、ページ管理ファイル32と、データファイル33を有している。

【0011】上記依頼端末10と印刷制御端末20に設けられた各ブロックは、それぞれ後で説明する一定の機能を有する制御プログラムや回路から構成される。依頼端末10の依頼アプリケーション12は、文書等を作成し印刷用のデータを生じ印刷制御端末20に印刷依頼を行うアプリケーションプログラム等から構成される。汎用オペレーションシステム14は、依頼端末10の動作を制御するよく知られた各種のオペレーションシステム(OS)から構成される。ページ境界検出処理部13は、後で図5を用いて説明するように、印刷用のデータから改ページとなる境界を検出してページ境界識別子を挿入する処理を実行する部分である。再印刷ユーティリティ11は、印刷終了後、その印刷結果に基づいて任意のページについてそのページを指定した再印刷依頼を印刷制御端末20に向けて出力する処理を行う部分である。

【0012】印刷制御端末20のユーティリティ21は、印刷制御端末20に設けられた一定の機能を管理する部分で、本発明の装置においては、依頼端末10の再印刷ユーティリティ11による再印刷要求を印刷処理部22に伝達する機能を持つ。印刷処理部22はプリンタ3を制御して印刷制御を実行するものである。スプーラファイル25の内容を印刷終了後、保存ファイル30に印刷用のデータを受け入れ、後で図6を用いて説明するようにしてページ境界識別子を検出し、スプーラファイル

ファイル30から読み出してプリンタ3に送り、印刷処理を実行できるようにしている。この目的のために、該当するページのデータを容易に抽出できるようにページ情報を含め、保存ファイル30に格納しておく。

【0017】図4には、再印刷要求に対する処理説明図を示す。本発明の方法では、この図に示すような状態で再印刷要求を受け付ける。まず、(a)には、スプーラファイル25から保存ファイル30に対して印刷用のデータとをコピーし保存した例を示す。印刷が正常終了した場合、このような保存が行われ、再印刷要求45があった場合、保存ファイル30から該当するページのデータを読み出し、印刷処理が実行される。

【0018】(b)には、印刷が正常に終了しなかった場合の取扱いを示している。印刷が正常に終了しなかった場合には2通りの取扱い方法がある。まず、印刷が正常に終了しなければスプーラファイル25の内容をそのままにして、印刷が異常終了した旨を依頼端末10に通知する。この場合、印刷制御端末20は他の印刷依頼の受付や印刷制御を中断し、依頼端末10の指示を待つ。そして、依頼端末10からページ指定の再印刷依頼があれば、図1に示したスプーラファイル25のページ管理ファイル27を参照し、データファイル28から該当するデータの読み出しで再印刷処理を実行する。

【0019】一方、印刷が異常終了した場合にも正常終了した場合と全く同様にスプーラファイル25の内容をそのままにして、印刷制御端末20に格納したままにすることが可能となる。一方、異常終了後、再印刷要求46があれば保存ファイル30に格納されたページ管理ファイル32を参照し、データファイル33から該当するページのデータを取り出し、印刷処理を実行する。これは正常終了後の再印刷要求と全く同一の手順となる。

【0020】以上いずれの場合にも、印刷依頼を受けた後再印刷依頼があるまで、印刷制御端末20の記憶部24に印刷用のデータが格納され保持されて、ページ情報に基づいて任意のページについてその該当するデータを取出し、印刷することができ、従って、再印刷要求に対し、印刷用のデータを依頼端末10から再送する必要はない。

【0021】上記の動作を以下フローチャートを用いて具体的に順に説明する。図5は、図1に示すページ境界検出処理部13の動作フローチャートを示す。まず、ステップS1において、依頼アプリケーション12から印刷用のデータを受け取る。次に、ステップS2においては、そのデータを1行ずつサッチし、改ページとなる境界を検査する。そして、ステップS3において、改ページ位置であると判断するとステップS5に移り、改ページ位置にページ境界識別子を格納する。その後は、次の行へサッチ対象を進める(ステップS6)。改ページとなる

境界がない場合には、ステップS4に示すように、そのまま次の行に移る。そして、ステップS7において、最終行であると判断されるまで、ステップS2へステップS6の処理が繰り返される。最終行までサッチが終了すると、ステップS8に移り、LAN等の通信回線1を介して印刷制御端末20のスプーラ23に対し印刷用のデータが転送される。

【0022】図6には、スプーラの動作説明図を示す。まず、ステップS1において、ページ境界検出処理部13からスプーラ23が転送データを受信する。次に、ステップS2において、印刷用のデータに含まれる印刷データの属性をスプーラファイル25の全体管理ファイル26に書き込む。そして、ステップS3において、印字データを1行ずつ解析する。その結果、ステップS4において、ページ境界識別子を抽出した場合には、ステップS5において、ページ管理ファイル27へページ情報を書き込む。その内容は図3に示した通りである。その後、ステップS6において次の行へ進み、ステップS7において最終行であると判断されるまで、ステップS3へステップS6の処理を繰り返す。こうして、印刷用のデータ中に含まれる全てのページ境界識別子を検出し、必要なページ情報をページ管理ファイル27に格納すると、ステップS8に移り、印字データをデータファイル28に格納する。

【0023】図7に、通常の場合の印刷処理フローチャートを示す。印刷制御端末20の印刷処理部22は、この図に示すような手順に従って印刷処理を実行する。まず、初めにステップS1において、全体管理ファイルから印字データの属性を読み出す。そして、その内容に従ってスプーラファイル25のデータファイル28からデータを読み出し、プリンタ3に向けて出力する。その後、ステップS3において、印刷結果が正常と判断された場合に判断する。ここで、印刷結果が正常と判断された場合にはステップS4に移り、スプーラファイル28を保存ファイル30に保存する。そして、ステップS6において、依頼端末10に対し印刷が正常終了した旨を通信回線1を通じて通知する。依頼アプリケーション12はこの通知を受けて印刷終了を認識する。

【0024】一方、ステップS3において、印刷結果が異常と判断された場合にはステップS5に移り、異常終了した旨を依頼アプリケーション12へ通知する。なお、この実施例では、このフローチャートのように、正常終了した場合のみ、図1に示すスプーラファイル25の内容を保存ファイル30に保存するようにしている。これは、異常終了した場合、印刷用のデータをスプーラファイル25に保持した状態で依頼アプリケーション12の再印刷依頼等を持ったためである。

【0025】図8には、障害発生時の印刷処理動作フローチャートを示す。障害が発生した場合には、印刷処理部22はこの図に示すような手順で印刷処理を実行す

る。まず、ステップS1において、依頼端末10の再印刷ユーティリティ11が動作し、ユーティリティ21を經由して印刷制御部22に対し印刷指示が送り込まれる。ここで、ステップS2において、その印刷指示の内容を判断する。印刷を中止する旨の指示があった場合には、ステップS3に移り、スプールファイル25の内容をそのまま削除してステップS10に移り、ユーティリティに対し印刷を指示する。それから、ステップS2において、印刷指示の内容が指定ページからの再印刷を示すものであればステップS5に移り、再印刷の再開始指定ページのページ情報をスプールファイル25のページ管理ファイル27から取り出す。そして、データファイル28からそのページ情報に従って該当するページの印字データを読み出す。その後、プリンタへそのデータを出し（ステップS7）、印刷を実行する。

【0026】また、ステップS2において、先頭から再印刷する旨の指示を受けた場合には、無条件でデータファイル28から印字データを全て読み出す（ステップ4）。この印字データもステップS7に進んでプリンタへ出力される。その後、ステップS8において、印刷が正常に終了したかどうかを判断され、正常に終了した場合には、図7のステップS4と同様にスプールファイル25の内容を保存ファイル30に格納する（ステップ9）。そして、ステップS10に移り、ユーティリティに制御を戻す。

【0027】図9は、正常終了後の保存ファイル再印刷処理動作フローチャートを示す。受け付けた印刷が見かけ上正常に終了した場合に、この図に示すような手順に従って再印刷制御が実行される。まず、ステップS1において、依頼端末10の再印刷ユーティリティ11が印刷制御部20のユーティリティ21を介して印刷依頼指示を行う。この場合、ステップS1からステップS2に移り、依頼指示の内容が判断される。依頼指示の内容が指定ページからの再印刷であればステップS3に移り、再印刷の再開始指定ページのページ情報を保存ファイル30のページ管理ファイル32から読み出す。そして、ステップS4に移り、保存ファイル30のデータファイル33から該当する印字データを読み出し、ステップS6においてプリンタ3へ出力する。その後は、ステップS7において、ユーティリティに制御を戻す。

【0028】図10には、随書発生時のユーティリティによる再印刷依頼動作フローチャートを示す。再印刷ユーティリティ11の側では、この図に示すような依頼動作が行われる。即ち、ステップS1において、随書発生後はその印刷処理を中止するか、ページを指定して再印刷を依頼するか、先頭から改めて再印刷を行うか等の指示を選択して依頼を出力する。その依頼が印刷制御部20に送られ、印刷処理が完了すると既に説明した手順に従って印刷制御部20から処理が戻る（ステップS2）。ここで、ステップS3において、正常かどうかを

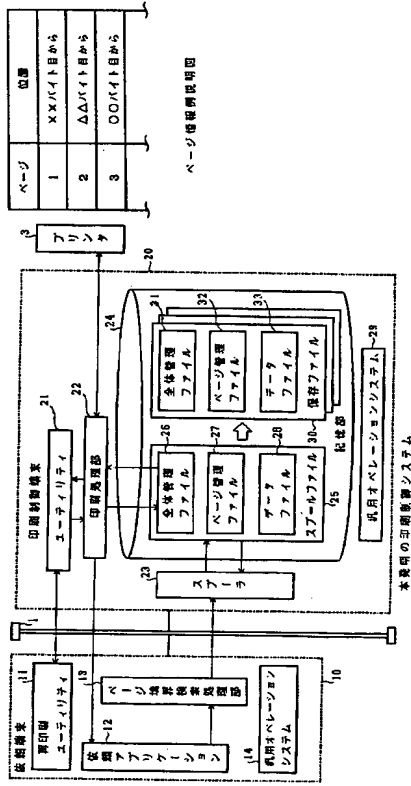
判断され、正常でなければステップS4において、再度再印刷依頼を実行するかどうかを判断され、再印刷依頼をする場合にはステップS1に戻る。また、印刷を中止する場合にはステップS5に移り、印刷処理中止を印刷制御部20に依頼する。

【0029】図11は、正常終了後の保存ファイル再印刷依頼の順に依るユーティリティの動作フローチャートを示す。正常終了後印刷不良部分があると、再印刷ユーティリティ11は印刷制御部20に対しページ指定の再印刷を行うか、先頭から再印刷を行うかの指示を返す指示依頼を出力する。そして、ステップS2において、印刷制御部20の印刷制御が完了し、制御が戻るとステップS3において、正常に処理が終了したかどうかを判断する。リトライを行う場合には、図10に示したものと全く同様、ステップS4からステップS5に戻る。また、リトライが不要な場合にはステップS5に進み、印刷の中止を依頼する。正常に終了していれば、ユーティリティの動作はそのまま終了する。

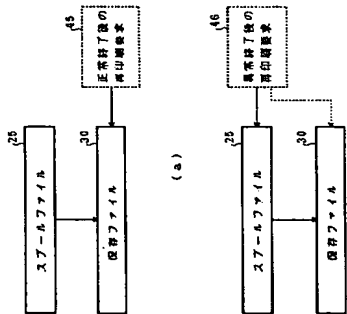
【0030】本発明の印刷制御方法は以上の実施例に限定されない。印刷情報の内容は、実質的に印刷用のデータから再印刷依頼があったとき、該当するページのデータを抽出できるようなものであれば、どのような形式、また内容のものであってもよい。また、先に説明したように、異常終了後の再印刷要求は、スプールファイルを参照しても、保存ファイルを参照できるようにしても差し支なく、全て一旦保存ファイルに格納するようにすれば、スプールファイルは新たな印刷要求等に自由に使用できるという利点がある。

【0031】また、保存ファイルには全ての印刷用データをそのまま保存しておく必要はない。即ち、適当なタイミングで既に再印刷依頼が発生するおそれのないデータを順番に消去しておくようなユーティリティを設けることが好ましい。

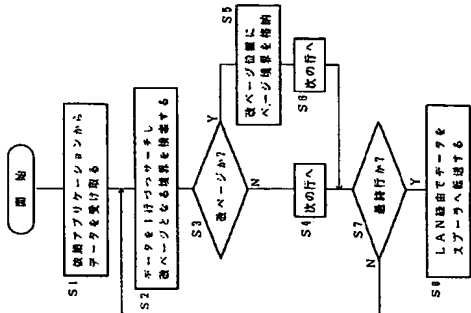
【図1】



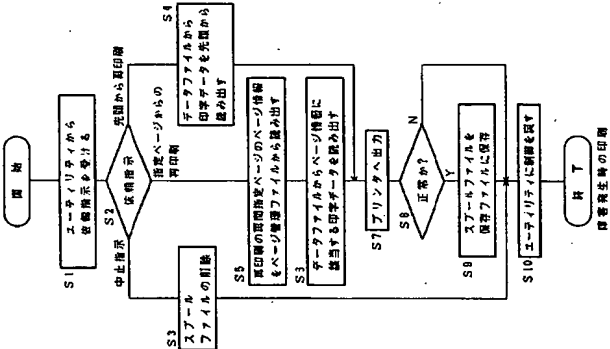
【図4】



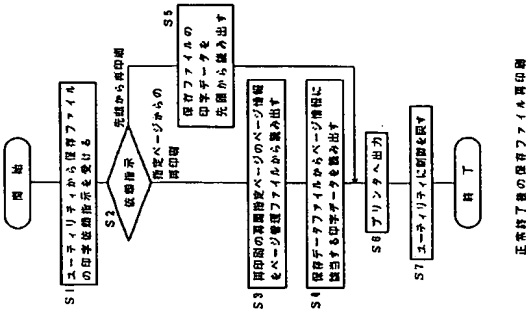
【図5】



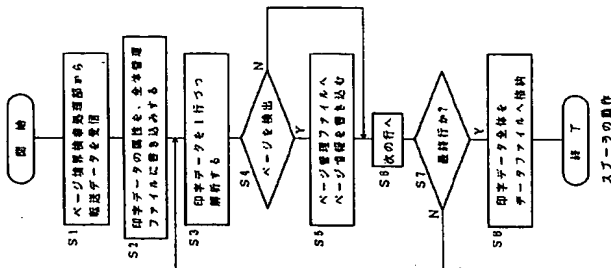
【図8】



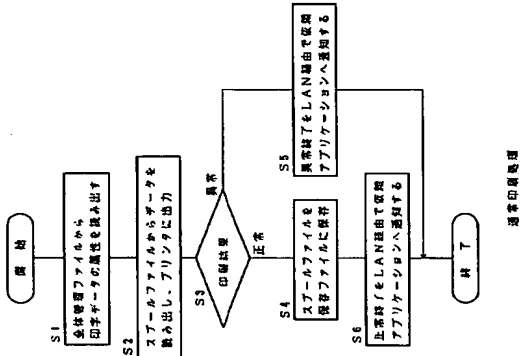
【図9】



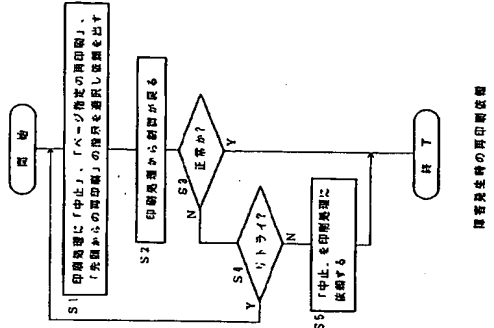
【図6】



【図7】



【図10】



【図11】

